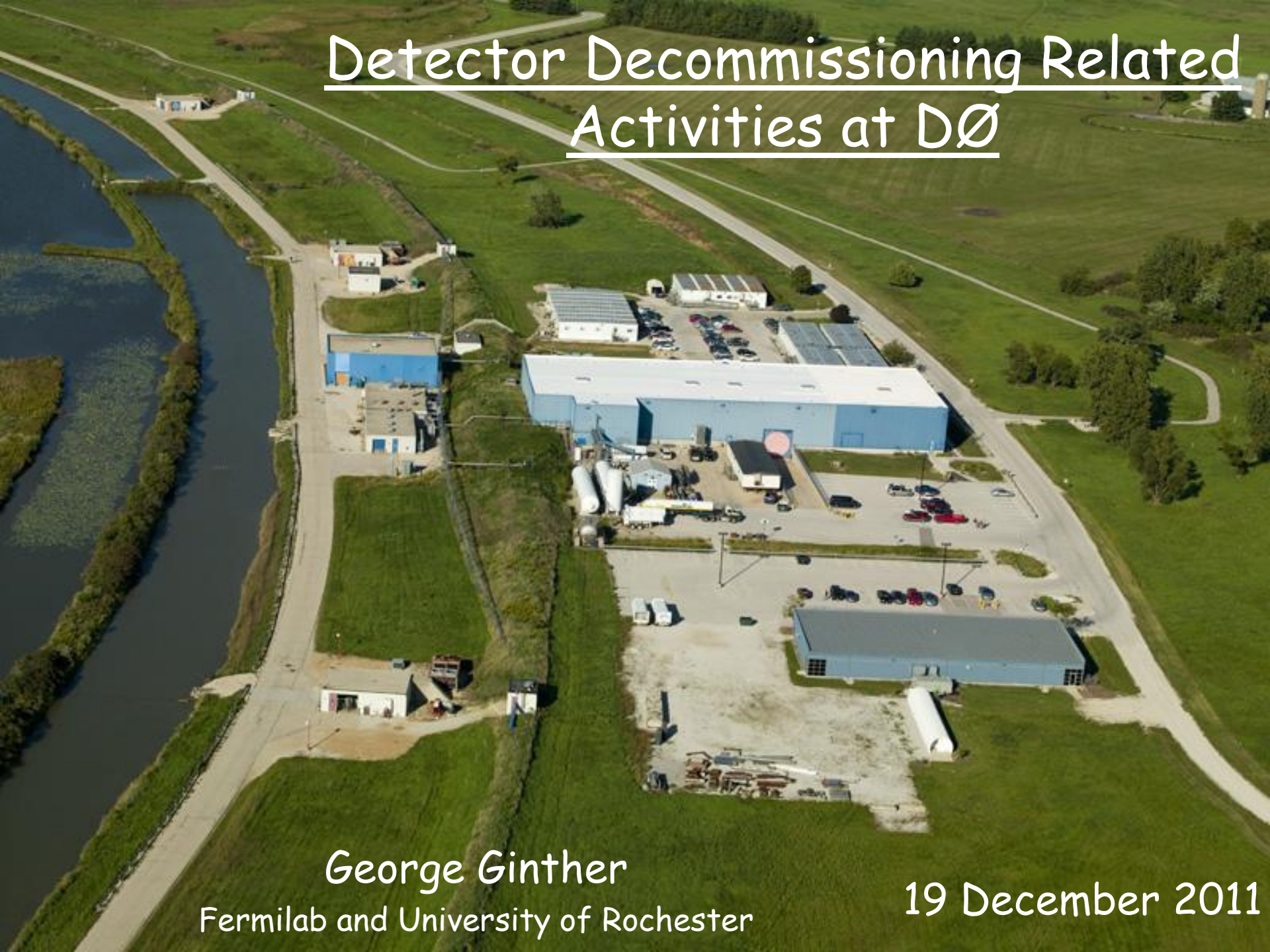


Detector Decommissioning Related Activities at DØ



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Fermilab and University of Rochester

19 December 2011



Overview of Detector Decommissioning Plan-Phase 1

- Provide educational and outreach opportunities by configuring the DØ detector as an exhibit
- Make valuable assembly hall real estate more quickly available for other uses while deferring more substantial demands on resources
 - **Stabilize and secure** the DØ detector
 - And **post-collider operations**
 - **Clean out** and prepare assembly hall for other activities
 - Continue cleanout and **harvest equipment** intended to re-use
 - Prepare and configure DØ detector for **basic exhibit**
 - Prepare **enhanced exhibit** for wider audience
 - Document status and archive procedures and equipment for (eventual) dismantling
- **Phase 2** (start date expected to be in long term future)
 - **Disassembly and disposal** of the DØ detector



Post-Collider Operations

- Eight weeks total of solenoid and toroid off cosmics
 - Alignment refinement and verification
 - ~1M events with track through silicon detectors
- One week in each of the four magnet polarity combinations
 - Verification of alignment and Lorentz corrections
 - Clustering performance
 - Studies of accidentals
- Final muon system source calibrations
- Investigate calorimeter bias current evolution
 - Ongoing studies of calorimeter bias current evolution until liquid argon is scheduled to be drained from the calorimeters
- Radiation damage and detector aging studies
 - Document annealing of Layer 0 silicon sensors after the Silicon Microstrip Tracker is warmed



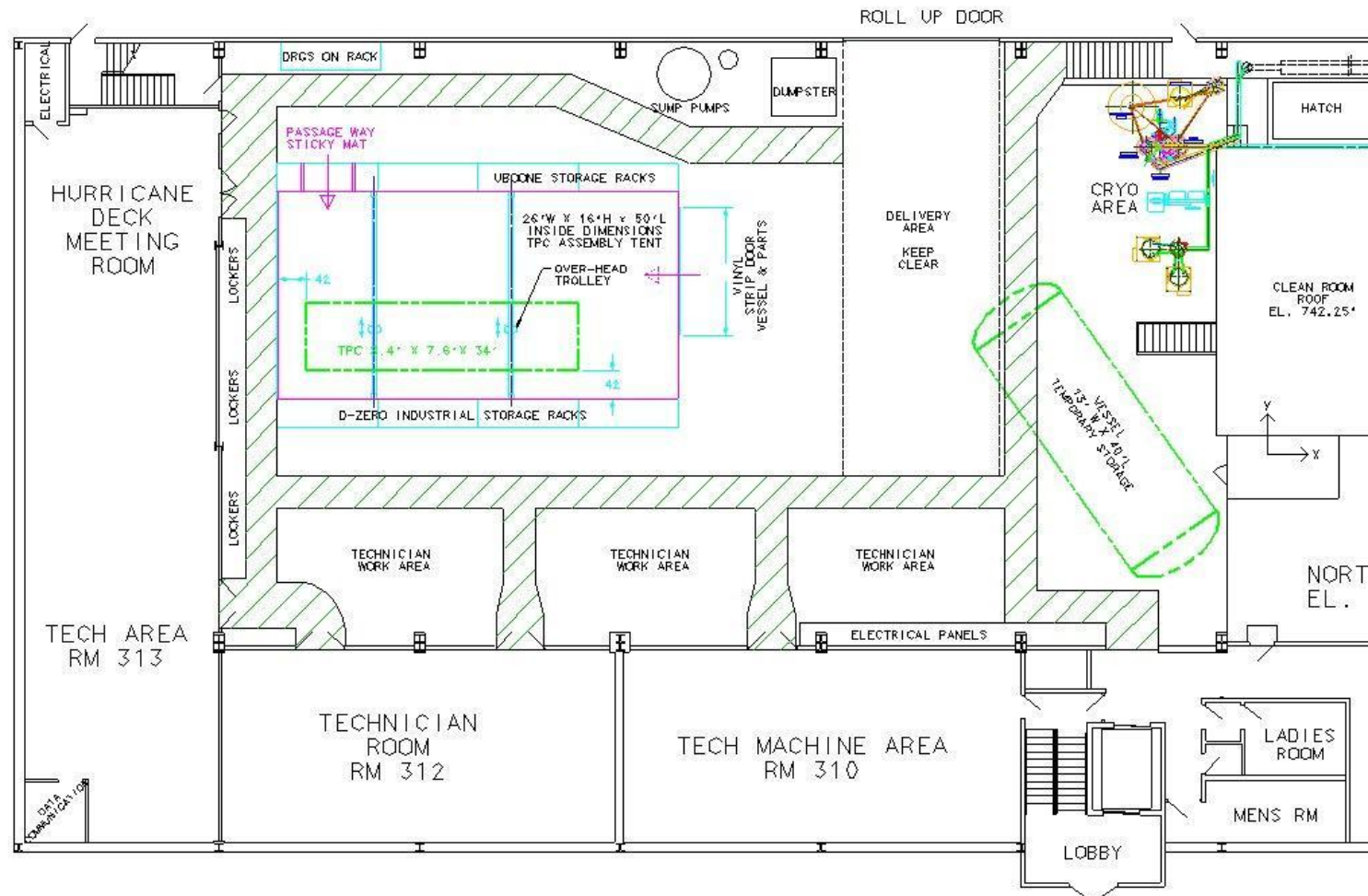
Secure and Stabilize

- Through January
 - Warm up silicon microstrip tracker
 - Shut down gas circulation to muon system
 - Turn off and secure high voltages
 - Warm solenoid
 - Drain and purge Low Conductivity Water system
 - Drain liquid argon from calorimeters and begin warm-up
 - Warm Visible Light Photon Counter cryostats (Fiber Tracker readout system)
 - Turn off and secure helium recovery systems
- As conditions (and resources) permit
 - Prepare online computing cluster for transition to offline cluster
 - Identify, backup and archive critical information
 - Power off low voltages
 - Shut down silicon chiller and purge system
 - Drain Deionized Chilled Water detector systems and purge
 - Decommission Trane Chiller
 - Secure halon fire suppression systems



Clean Out and Harvest

- The mechanical crew is well into the process of preparing the DØ Assembly Building high bay to accommodate MicroBooNE TPC assembly



High Bay 22-Nov-2011



High Bay 19-Dec-2011





Re-use Opportunities

- Phototubes and scintillators
- VLPC readout system
 - VLPC cassettes
 - Waveguides
 - AFEII readout boards
- Electronics and VRB readout crates
 - Much of this is rather specialized
- BiRa Model 4877 VME High Voltage Power Supplies
- NIM electronics and racks
 - Return equipment to PREP
- Power supplies
 - Wiener Power Supplies
 - Vicor power supply modules
- Electronics racks, heat exchangers, blowers
- Rack Monitors and 1553 slow controls system
- Argon inventory
- Beam pipes
- Infrastructure
 - Scopes, meters and other diagnostic tools
 - Tools, scaffolding, ladders, lift equipment, shelving
 - UPS
 - Power supply test stand
 - Vacuum pumps, leak detectors
 - Compressors and air dryers
 - Chillers
 - Hydraulic systems
 - Liquid helium and liquid nitrogen dewars
 - Tube Trailers
- Level 3 farm nodes
- Investigating the possibility of recovering individual components from some electronics boards



Some Potential Challenges Related to Harvesting

- Exhibit plans and resources limitations will likely influence deliberations and constrain possibilities for re-use of components
 - The detector is not expected to be rolled-out of the collision hall in the near term
 - limited access to components mounted on the detector
 - Expect that those interested in re-use will need to provide resources to prepare, harvest and ship the components of interest
- Resolving (potential) ownership issues
- Keeping track of inquiries and requests
 - May need to develop scheme to adjudicate between conflicting requests
- Disposition of materials removed from a posted radiation area



Exhibit Overview

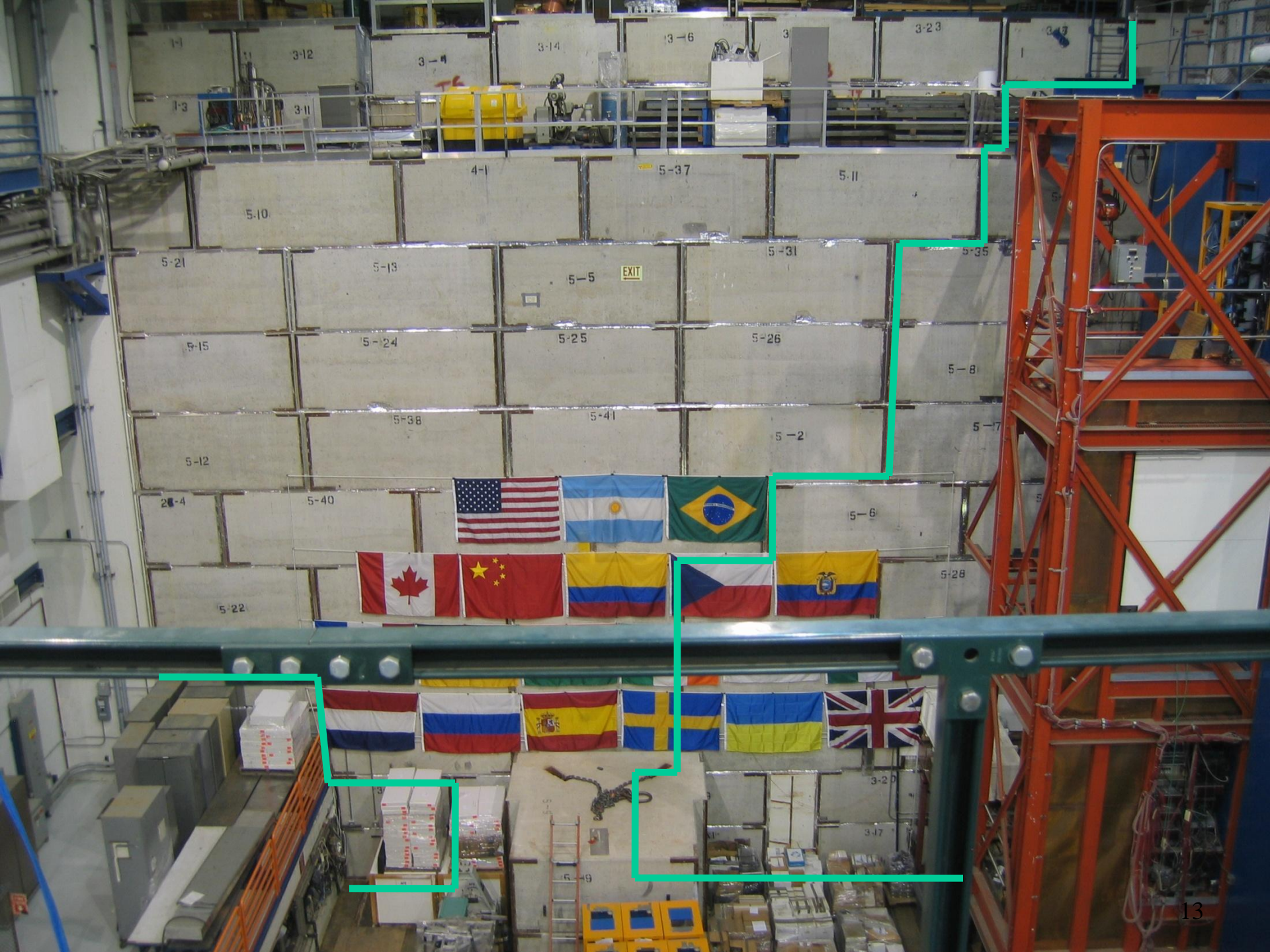
- Provide orientation/overview of Tevatron and DØ
 - Highlight the Energy Frontier aspects of the HEP mission
 - Opportunity to view (and explore) the DØ detector
 - Also highlight infrastructure to give visitors some sense of the support required to successfully operate a modern HEP experiment
 - Potential opportunity to see development of next generation of detectors in progress
- From the overlook points, the intent is that the detector would appear as if in data taking configuration
- In the enhanced exhibit (or in VIP tours), individuals would have the opportunity to explore deep inside the DØ detector since the back side of the detector would be fully opened



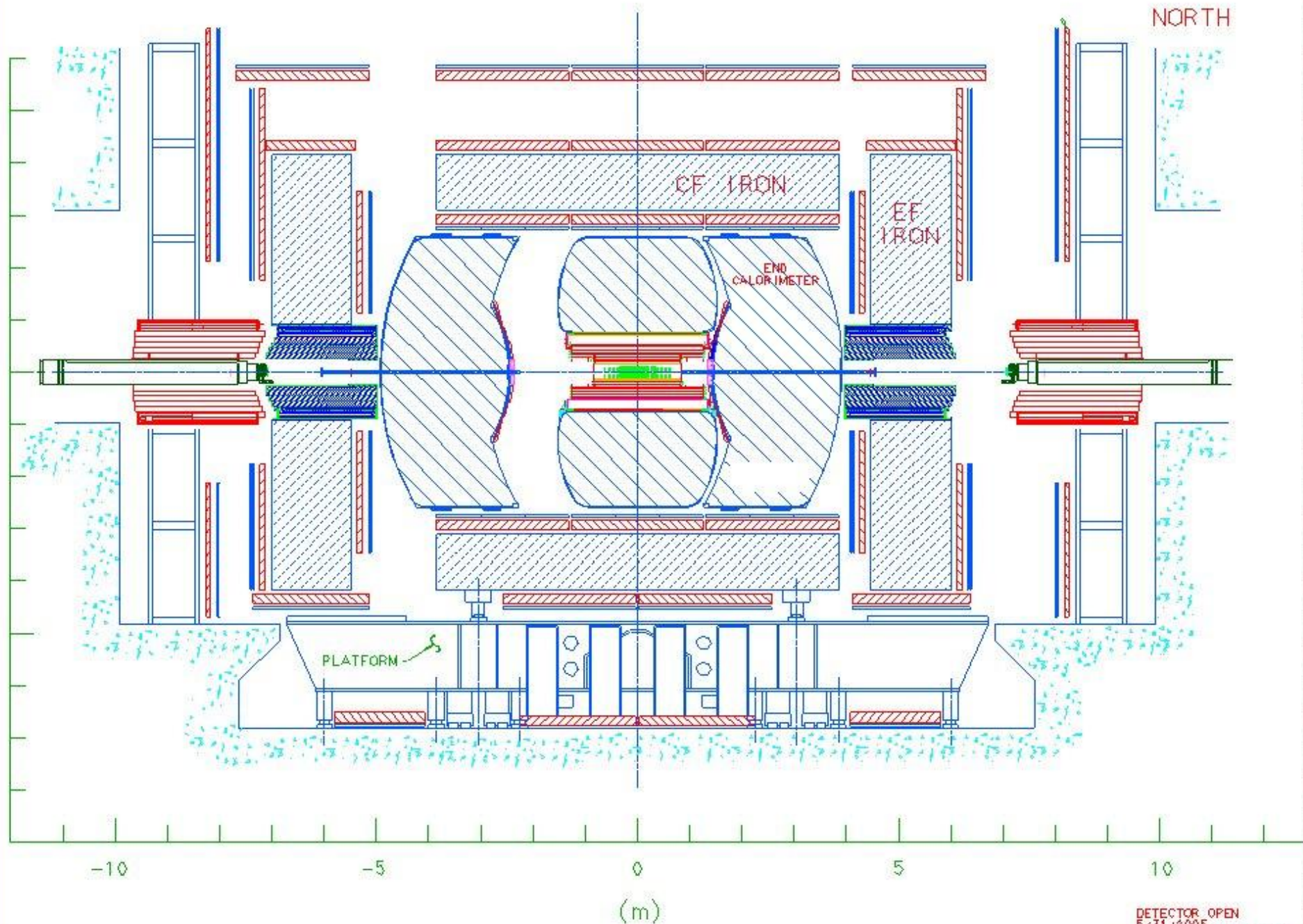
Preparing the Basic Exhibit

- Cleared north sidewalk area and moved current collection of artifacts into that area
- Reconfigure concrete shield block wall
 - Clear top of wall and dismount bus work as needed
 - Support helium cryo lines
 - Disconnect air handling units
 - Take down much of concrete block wall
- Install barriers to control access to collision hall
- Configure detector for exhibit
 - Move north toroid onto sidewalk and open west central iron and move north end calorimeter back to expose gap
- Aim to be ready with basic exhibit prior to Tevatron symposium in early June 2012









DETECTOR OPEN
5/31/2005
FROM LAYOUT# 900764



Enhancing the DØ Exhibit

- Enhance detector tour
 - Install stairway to cathedral (area between calorimeter cryostats and A Layer muon)
 - Install gap overlook platform (space between central and end cap calorimeter cryostats)
 - Peel back tedlar for "cut-away" view in gaps (partially expose beam pipe, end of tracking volume, lumi monitor, Inter Cryostat detector, Forward Preshower detector)
 - Improved lighting
- Enhance control room experience
- Provide meeting room on fifth floor of DØ Assembly Building
- Update parking lot flow pattern
- Enhance display area with future accelerator and/or detector development components
- Prepare fifth floor mechanical walkthrough
- Install improved hand rails on clean room roof
- Install doors at exits of first and third floor elevator lobbies?
- Update the DØ Assembly Building alarm panel?
- Install picture window to provide cryoyard view from catwalk
- Refresh outside/overview of berm



Detector Decommissioning Summary

- DØ is nearing the end of the planned post-collider detector operations period aimed at collecting supporting data samples
- Once this data collection is complete, the detector will be warmed stabilized and secured
 - Most subsystems secured by spring, calorimeter warm-up will continue for months
- Making significant progress in preparing the Assembly Building to accommodate additional operations
 - High bay will be ready for installation of MicroBooNE TPC assembly clean room in advance of the project's required milestone
- Anticipate resources will be sufficient to secure the detector and provide the basic detector exhibit in 2012
 - Constraints generated by broader lab plans are being integrated into the decommissioning effort and may impact the schedule
- This flexible plan should provide the opportunity to maximize the productivity of the lab's staff while ensuring that the DØ detector is put into a safe and secure state and transitions into a valuable educational exhibit

DØ Mechanical Operations Team



DØ Operations Support Teams

John Najdzion

Mike Sarychev

Pete Simon

Bob Barger

Bryan Johnson

Pat Healey

Bill Frank

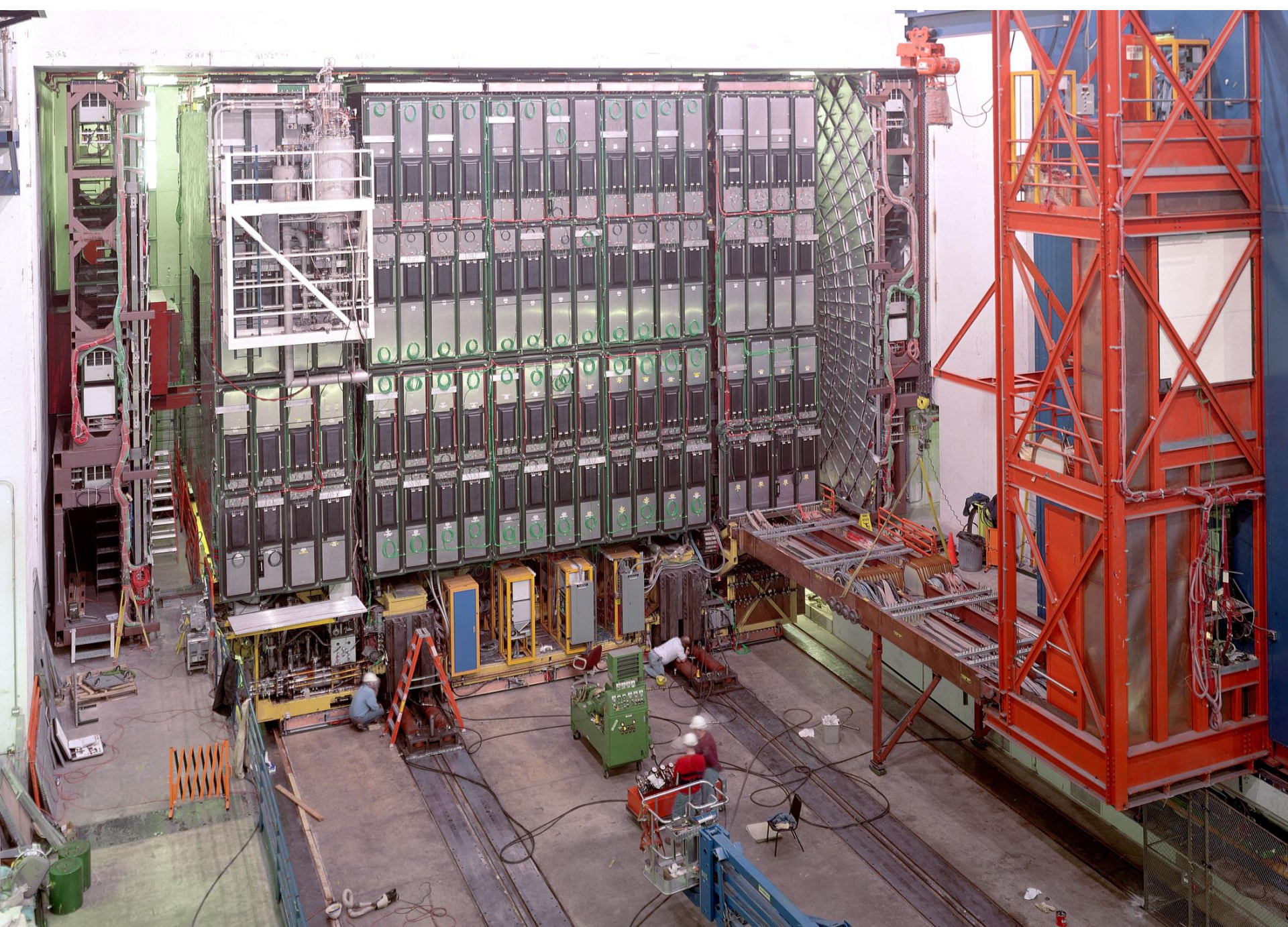
Bob Kubinski

Russ Rucinski

PPD Electrical Engineering
Department members Mike Cherry,
Victor Martinez, Tim Martin,
Mike Matulik, and Bruce Merkel
also provide essential support



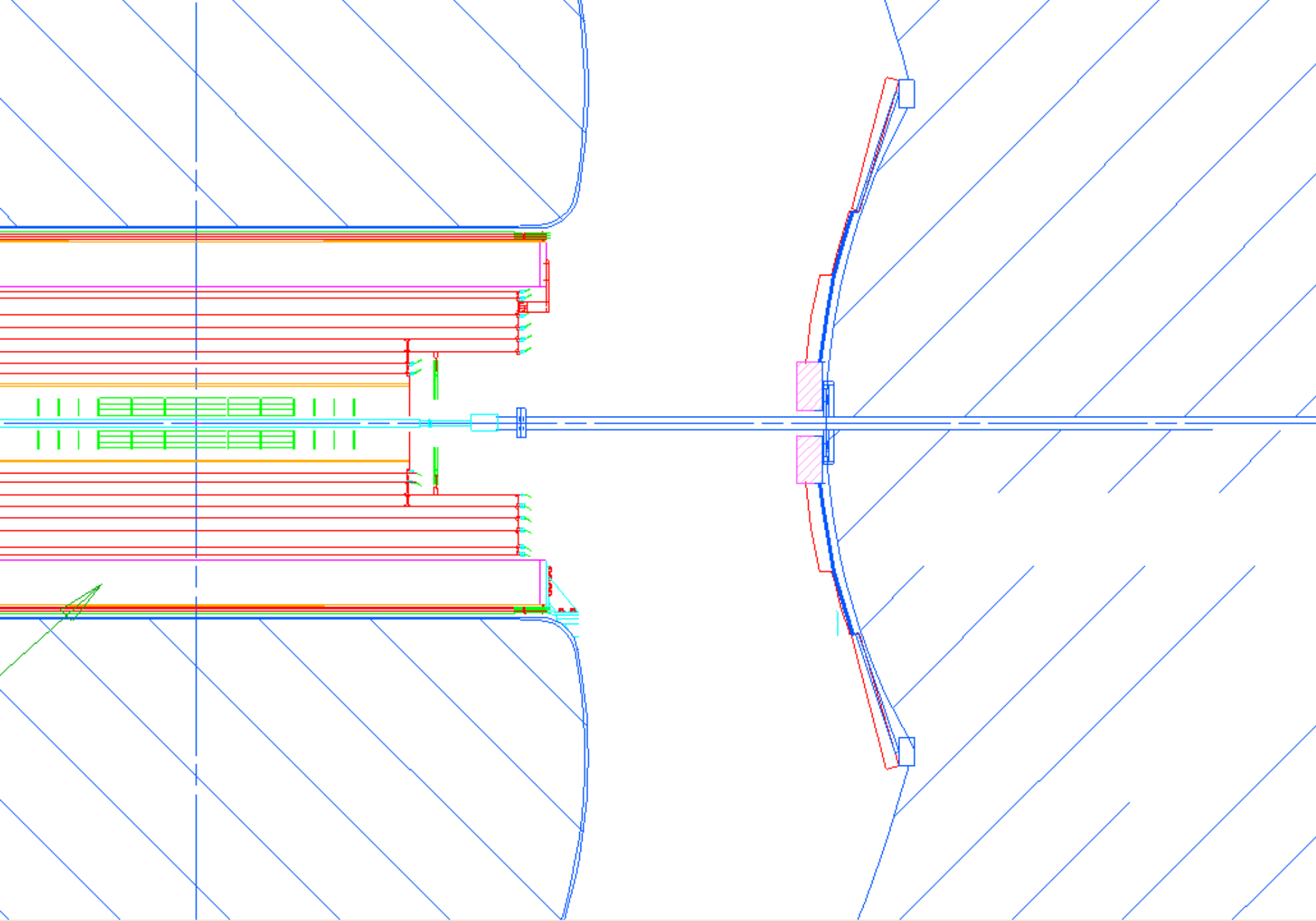
Backup Slides

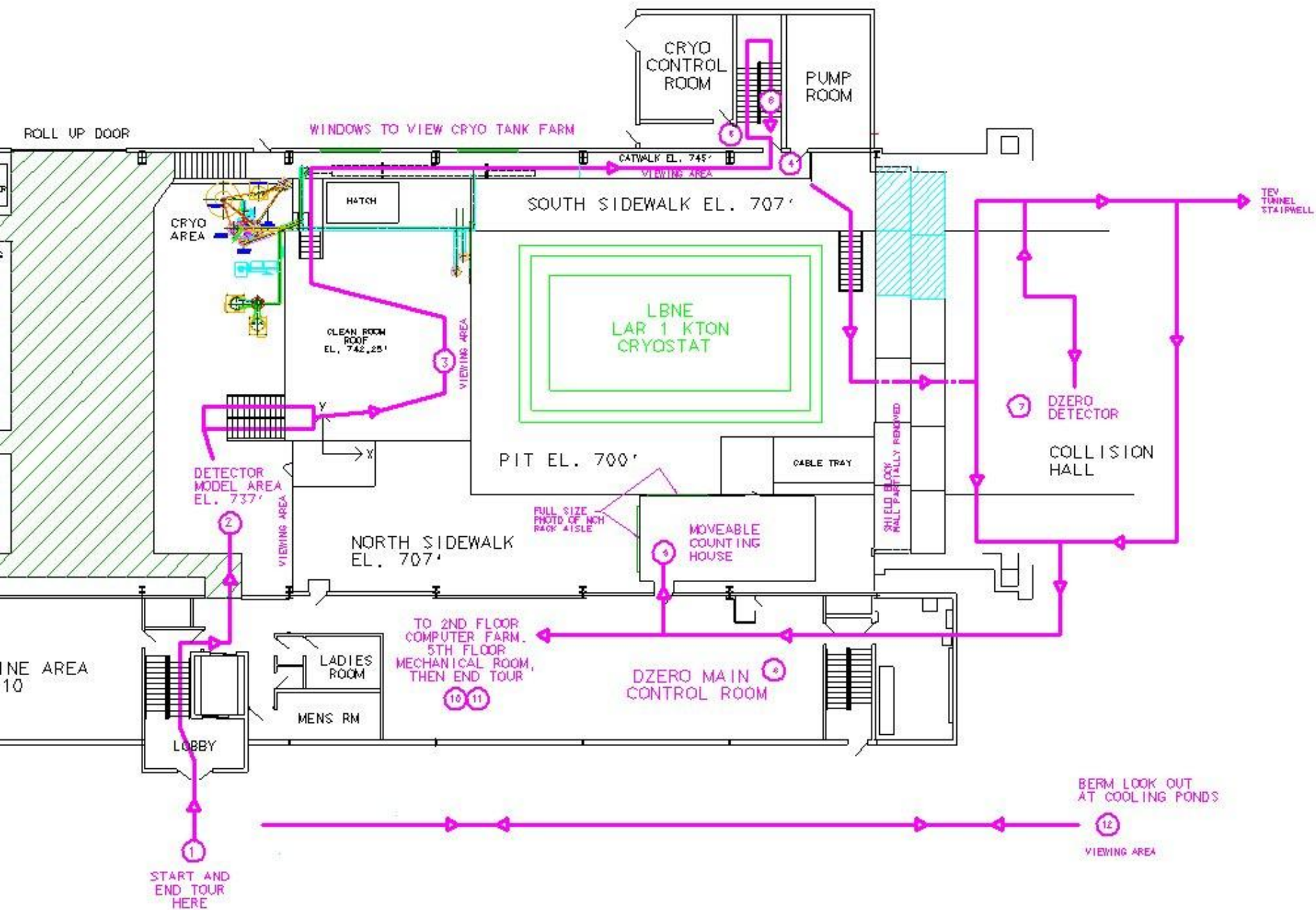


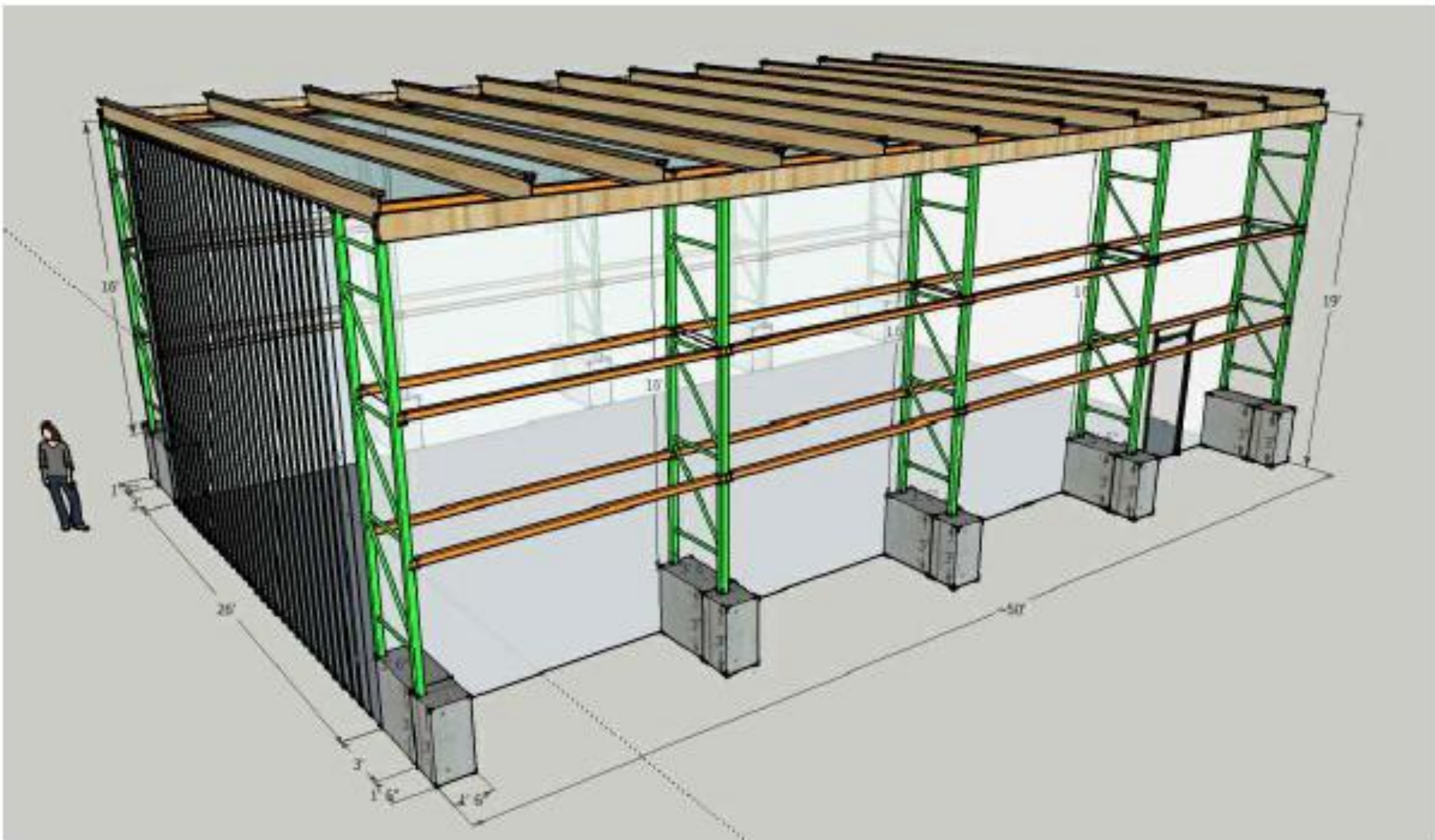


Dismantling and Disposal

- Plan to maintain exhibit for many years...
- A plan for phase 2 (dismantling and disposal) has been generated and refined (but could still use significant additional attention)
- Many of the relevant drawings and older documents are currently available in hard copy only
 - The plan is to maintain that information at DØ
- Preservation and documentation of fixtures at railhead in preparation
 - Pictures are being integrated into a document describing the function of the various fixtures







ISOMETRIC VIEW

SCALE: NONE

